APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,990	12/19/2000	Andreas Eisele	D/A0470	2701

7590   06/27/2005

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EXAMINER
SKED, MATTHEW J

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-11,19 and 20* is/are rejected.

7) ☒ Claim(s) *12-18* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *1/3./02*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1.   The oath or declaration is defective. A new oath or declaration in compliance

with 37 CFR 1.67(a) identifying this application by application number and filing date is

required. See MPEP §§ 602.01 and 602.02.

> The oath or declaration is defective because: the oath or declaration is missing
> from the application.

Claim Rejections - 35 USC § 112

2.   Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Claim 1 states that the first and second text is in a first and

second language, respectively. Claim 11, which depends upon claim 1, states that the

first and second texts are DNA sequences. Therefore, this limitation contradicts the

claim language in claim 1.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Berger et al. (U.S. Pat. 6,304,841) in view of Gale et al. ("A Program for Aligning

Sentences in Bilingual Corpora"), cited by the applicant, and taken in further view of Melamed ("Bitext Maps and Alignment via Pattern Recognition"), also cited by the applicant.

As per claims 1, 19 and 20, Berger teaches a method of extracting translations from translated texts, the method comprising the steps of:

accessing a first text in a first language (source text, Fig. 11, element 10);

accessing a second text in a second language, the second language being different from the first language, the second text being a translation of the first text (target hypothesis generator generates target hypotheses that are translations of the source text, col. 5, line 41 to col. 6, line 4);

dividing the first text and the second text each into a plurality of textual elements (alignment connects each source word with each target word hence the text must inherently be divided into these segments, col. 6, lines 22-26);

forming a sequence of pairs of text portions from said plurality of textual elements, each pair comprising a text portion of the first text and a text portion of the second text, each text portion comprising zero or more adjacent textual elements, each textual element of the first and the second text being comprised in a text portion of the sequence (aligns each source word with at least one target word, col. 6, lines 22-38);

calculating a pair score of each pair in the sequence (calculates a word match score for each source word and target hypothesis word, col. 7, lines 45-53);

calculating an alignment score of the sequence using said pair scores, said alignment score indicating the translation quality of the sequence (calculates a translation match score by combining the word match scores, col. 11, lines 44-53); and

optimizing a hypothesis match score by searching through the space of alternatives (target hypothesis generator generates multiple hypotheses and the hypothesis with the best match score is outputted hence optimizes the score by choosing the hypothesis with the best score, col. 12, lines 40-44).

Berger does not teach using the number of occurrences of each of a plurality of features in the text portions of the respective pair and using a plurality of weights, each weight being assigned to one feature of said plurality of features.

Gale teaches a method for aligning texts that calculates a distance measurement between the two portions of text that uses the number of occurrences of a plurality of features of the respective pair and using a plurality of weights (uses the lengths of the two portions of text (number of occurrences of features) and the means and variance (weights) to calculate the distance measure, page 7, last three paragraphs).

Gale does not teach each weight is assigned to one feature of said plurality of features.

However, the Examiner takes Official Notice that weighting individual parameters separately is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the number of occurrences of each of a plurality of features in the text portions of the respective pair and use a plurality of weights as taught by Gale, each weight being assigned to one feature of said

plurality of features because this would allow multiple attributes of a word pair, each

weighted appropriately, to be used in calculating the score hence giving a more robust

calculation.

Berger and Gale do not teach optimizing said alignment score by combining

optimal alignments for subsequences into optimal alignments for longer sequences.

Melamed teaches a for aligning texts by grouping similar points together into

subspaces and finds optimal subspaces based upon their distance from the main

diagonal, these subspaces would then be chained together to form long sequences,

section 4.5, pages 117 and 118).

It would have been obvious to one of ordinary skill in the art at the time of

invention to modify the system of Berger and Gale to optimize the alignment score by

combining optimal alignments for subsequences into optimal alignments for longer

sequences as taught by Melamed because it would optimize the path by ensuring the

optimal points were use in the alignment score calculation.

5.   As per claim 2, Berger teaches a monolingual preprocessing step that includes

performing normalization of the textual elements, said normalization includes case

normalization (transforms the input text by correcting the case of the words and

transforming the words into a basic form, col. 5, lines 7-32).

Berger does not teach counting the frequencies of the normalized textual

elements that occur in the text, storing the frequencies, and using these frequencies to

pair textual elements.

Gale teaches counting the lengths of each portion and using the lengths to calculate distance measures for perspective pairs (page 7, last three paragraphs).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Berger to count the frequencies of the normalized textual elements that occur in the text, store the frequencies, and use these frequencies to pair textual elements as taught by Gale because the more the pairs would share occurrences the more likely they should be aligned together hence improving alignment.

Berger, Gale and Melamed do not teach reducing at least one weight assigned to a feature occurring in a text element pair if the difference between the frequencies of the paired textual elements exceeds a certain threshold.

However, the Examiner takes Official Notice that adapting weights is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Berger and Gale to reduce at least one weight assigned to a feature occurring in a text element pair if the difference between the frequencies of the paired textual elements exceeds a certain threshold because it would give more weighting to commonly occurring pairs which would be more likely to be paired hence improving alignment.

6.   As per claim 3, Berger teaches the alignment score is calculated by the product of all the pair scores (col. 11, line 44 to col. 12, line 19) and the alignment score is optimized by selecting the maximum alignment score (target hypothesis generator generates multiple hypotheses and the hypothesis with the best match score is outputted hence optimizes the score by choosing the hypothesis with the best score,

col. 12, lines 40-44). Applicant asserts that taking the sum rather than the product of the pair scores is a matter of designer's choice because it does not overcome any deficiencies of the prior art.

Berger, Gale and Melamed do not teach the pair scores are calculated by taking, for each feature occurring in the pair, the minimum number of the numbers of occurrences of the respective feature in the paired text portions, taking the product of said minimum number and the weight assigned to the respective feature and summing up all said products of the respective feature.

However, the Examiner takes Official Notice that choosing the best value from a set of values for computation is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Berger, Gale and Melamed so pair scores are calculated by taking, for each feature occurring in the pair, the minimum number of the numbers of occurrences of the respective feature in the paired text portions, taking the product of said minimum number and the weight assigned to the respective feature and summing up all said products of the respective feature because it would ensure the most appropriate value is used for the calculation hence ensuring a favorable result.

7.   As per claim 5, Berger, Gale and Melamed do not teach the plurality of features include document structure and formatting information.

However, the Examiner takes Official Notice that using document structure in alignment algorithms is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of

Berger, Gale and Melamed so the plurality of features include document structure and

formatting information because the location in the document of the translation would not

change drastically hence using this information would give good alignment results.

8.   As per claim 6, Gale teaches the plurality of features include any character within

the text (features of length of characters, page 7, last three paragraphs).

        Berger, Gale and Melamed do not teach the weights of such features being lower

than the weights of other features.

        However, the Examiner takes Official Notice that assigning weights in order to

deemphasize a feature is well known in the art. Therefore, it would have been obvious

to one of ordinary skill in the art at the time of invention to modify the system of Berger,

Gale and Melamed so the weights of such features would be lower than weights of

other features because this would skew the calculation to a more preferable result.

9.   As per claim 7, Berger teaches the step of normalizing textual elements, which

includes case normalization (corrects the case of the input words hence normalizing the

textual elements, col. 5, lines 7-32).

10.   As per claim 8, Berger teaches the step of accessing at least one bilingual

resource (uses target language vocabulary store to generate target hypotheses of the

source text hence the vocabulary store must be bilingual, col. 5, lines 41-49).

11.   As per claim 9, Berger teaches the first text is in the form of a document (source

text inputted from disk drive hence saved, col. 4, lines 57-63), first and second

languages being natural languages and wherein the method is used for extracting

sentence translations (translates a French sentence into an English sentence).

Berger does not teach the second text is a document.

Gale teaches the two texts are documents (input are documents, Table 1).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Berger so the second text is a document as taught by Gale because it would save processing time by not having to construct this translation at run-time.

12.   As per claim 10, Berger, Gale and Melamed do not specifically teach the first and second texts are transcripts of speech signals.

However, the Examiner takes Official Notice that speech-to-text processing is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Berger, Gale and Melamed so the texts are transcripts of speech signals because it would allow the system to translate user's speech hence making the system more versatile

13.   Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berger in view of Gale and taken in further view of Melamed and applicant's admitted prior art.

Berger, Gale and Melamed do not teach the plurality of features include lexical information.

Applicant's admits that alignment techniques based upon lexical information are known in the art (page 2, lines 7-8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Berger, Gale and Melamed so the plurality of features include lexical information because its meaning would give a good indication of its appropriate translation hence improving alignment.

Allowable Subject Matter

14.   Claims 12-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15.   The following is a statement of reasons for the indication of allowable subject matter: As per claim 12, Gale teaches a dynamic programming algorithm used in translation alignment that accesses a set of nodes, each node being a pair of positions in the first and second texts, each node being annotated with a node score (nodes created for each pair where the pair would have a probabilistic score, section 3, pages 5-7).

None of the prior art on record teaches applying a set of node transitions to each these nodes to generate a set of successor nodes for each node and where each successor node has a node score that is calculated based upon the node score of the node accessed for generating the successor nodes. It would not have been obvious to one of ordinary skill in the art at the time of invention to modify the systems of Berger, Gale and Melamed to arrive at the applicant's invention.

16.   Claims 13-18 would be allowable because they further limit the claims to which they refer.

Conclusion

17.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tillmann et al. (U.S. Pat. 6,182,026), McCarley (U.S. Pat. 6,349,276), and Hargrave III et al. (U.S. Pat. 6,131,082) teach alternate methods of translation document alignment. Yamabana (U.S. Pat. 6,332,118) and Marcu (U.S. Pat. Pub. 2002/0040292A1) teach translation alignment through creating connections between trees. Baeza-Yates et al. ("A Fast Algorithm on Average for All-Against-All Sequence Matching") teaches creating alignments between DNA sequences.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Sked whose telephone number is (571) 272-7627. The examiner can normally be reached on Mon-Fri (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free).

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06/22/05

SUSAN MCFADDEN
PRIMARY EXAMINER